1: Gillin E-5 (1932-33) 1936 SR9 Carib SR9

by dash line). David is the blood relative of six members of the settlement (indicated by dot-dash line). Mary, the sister of Miller's deceased wife, is related by blood to seven individuals (indicated by dotted line). Christina, David's present wife, and her sister Margaret make up the fifth blood group (indicated by a line composed of dashes interspersed with two dots). Unconnected with these five blood groups are Rose, wife of John, and Lulu, the wife of Edwin.

Now it is certainly possible that all the members of this settlement are more or less distant blood relatives. According to the best estimates, the total Carib population of the Barama country does not exceed six hundred souls. The local traditions of the Indians state that their ancestors migrated into the Barama country from a former home around the head of the Corentyne River. Less than a hundred years ago, Schomburgk found a few Akawai villages on the Barama, apparently representatives of the tribe which formerly occupied the whole region and which at that time was in the process of being eliminated.[1] Even today the Barama Caribs express a feeling of antagonism toward the Akawais as a group, perhaps a survival of the rivalry between the two groups consequent upon the Carib usurpation of the area. On the basis of this evidence it would seem improbable that the ancestors of the present Caribs were in the Barama area much before two hundred years ago. And it would be conceivable that in some distant way most of the present living individuals are related by blood. However, the isolation of the settlements and the difficulties of travel in the region have in many cases erased the memory of such connections from the minds of the people, if in fact such connections actually existed. The important fact from the sociological point of view is that in many instances, as here at Sawari, individuals are not consciously aware of actual blood relationship with certain other individuals.

Reference to the preceding section will acquaint the reader with the kinship terminology. In checking this material I found that men applied the term pamuko (male cross cousin) not only to men who were known to be their cross cousins, but also to all men of the speaker's generation who were not known to be parallel cousins, men, that is, who were not considered actual blood rela-

[1] Schomburgk, 1922–23, *Travels in British Guiana*, Vol. I, Chap. XI.

121 informants or locations, another dimension is added here. Individ-
114 uals can be identified and the establishment of trans-generational
124 continuity is possible.

121 Two areas of theoretical concern particularly lend themselves to
*177 investigation under the fortuitous circumstances of being able to
[161] trace changes occurring over time among a specific group. The first
is cultural change: the second, human population control mechanisms.

175 In regard to cultural change, until forty years ago the Caribs
*177 of the Upper Barama River were adapting to the equatorial rain
182 forest with essentially a lithic technology. They combined hunting,
[22] fishing, and collecting with a semi-nomadic form of horticulture.
[241] Currently, the majority of these Caribs are settled at a community
*177 known as Baramita Air Strip. They engage in wage employment, make
[465] use of regional markets for local products, participate in agricul-
[438] tural development programs, and benefit from national medical
[242] programs. From a position of relative isolation in the rain forest,
[657] this group has been increasingly encapsulated in the national
[161] political economy. Attending this development has been changes in
their population size and composition as well as internal organiza-
tion. These changes are a major focus of the present study.

121 In pursuing the analysis of these changes, cultural materialism
is relied upon as the most economical mode of explanation. Among
others, Harris (1968) has proposed that techno-environmental
determinants can serve in a comparative approach to cultural
adaptation. One example of this approach is Murphy and Steward's
comparison of the Mundurucu of Brazil and the Northeastern

121 Algonkians of Canada (1956). The Schwerin report (1966) and
[114] particularly Kloos' (1971) analysis also employ a frame of reference that gives emphasis to techno-environmental factors that are generative of cultural adaptation and change.

121 Accordingly, it is proposed that the organizational strategies of
*179 human populations conform to determinants of the exploitative technologies and the resources available. This hypothesis is used to inquire into cultural change among the Caribs of the Upper Barama
101 River. The Carib population identified as the unit for study is a
• [161] small group, currently numbering about 550. They alone inhabit the Upper Barama River drainage basin. The boundaries of the local population are identified operationally by the cultural practices which maintain a shared set of material exchanges (Rappaport 1969:
101 184). However, these cultural practices have changed as the
*179 materials or resources available to be exchanged have been altered. Over time, external resources have been added to those locally available. What has been maintained is the common participation of this population in these exchanges. Changes affecting the resources available to the Upper Barama River Caribs will be more fully explored in Chapter II.

121 A second problem with which this study is concerned has to do
182 with certain aspects of human population ecology. Alland (1967) proposes that population adaptation is situationally specific. Accordingly, human adaptation measured by population size can be evaluated in two instances: (1) when two competitive populations occupy the same environment; and (2) when one population occupies

121 a particular environment over a prolonged period of time. This
182 study uses the second option.

However, Alland also proposes that trans-generational population studies be conducted with a systemic reference. The manner in which population size is changed and acts to transform the system of which it is a variable is to be investigated. Previous ecological studies have been conducted on single human populations. Such studies include those by Steward (1938), Vayda (1961), Leeds (1965), and Rappaport (1968). The problems focused upon are relationships among environment, technology, population size, and cultural patterns. These relationships also are considered here. However, this study substantially from these previous ones. First, this is a trans-generational study; because of the data available, changing population adaptation can be evaluated. Also, the systemic assumptions which these earlier studies rely upon cannot be made here. Among the Caribs of the Upper Barama River area, the rapidly changing impact of regional resources does not allow the postulation of an equilibrium system operating within identifiable parameters. Rather, within the limits of the phenomena, the concern here is more simple and direct. The responses of cultural patterns and population size to independently occurring, external resources are explored. The nature of these correlations, rather than their causes, is the object of this inquiry.

121 With regard to population size, it has been noted (Birdsell 1953,
182 Stott 1962, Alland 1970) that human populations adapting to local
161 environments with a lithic technology disclose a relatively low

121 population density. For the most part, these ecological studies
161 consider population size a variable in a closed system. Thus, low
[182] density is attained by behavioral patterns which regulate population size relative to local resources. Cultural practices which control conception or carry a high mortality hazard for an age segment of the population intervene to limit the population size below the limits of the available resources. In the case of the Upper Barama River Caribs, changes in population size will be investigated in relation to a succession of external resources and can be easily identified.

114 Data for this study were collected from several sources.
127 Gillin's report on the same group, The Barama River Caribs of British Guiana (1936) has already been mentioned. In addition, archival data of a general nature and census reports were collected in Georgetown. Finally, field work was conducted on the population in question over a nine-month period in 1970-71.

121 In sum, this inquiry is a case study of cultural change and
* 177 attendant shifts in aspects of the human population ecology. The
16 focus is directed to adaptations made by the Upper Barama River
[182] Carib population with their entrance into a regional political economy. The nexus between the nature and extent of external resources available in the Upper Barama River drainage basin and changes in the organisation and size of the local Carib population will be explored in the following chapters.

162
602 population are related in some manner.

In addition to a generational continuity of the human group
175
591 involved, there has also been a continuity in interaction. That is,
166 during the period under consideration, material exchanges and the migrations of individuals among Carib settlements in the Upper Barama area have been more pronounced than such exchanges with outside settlements. This permits the Upper Barama Caribs to be
[121] identified as a single adapting population for the purpose of this
*179 analysis (Rappaport 1969:184). However, the frequency of contacts
361 and the nature of movements among settlements have changed. Specifically, small, dispersed, semi-nomadic social units have given way to nucleations around centers where external resources are available. In this context, different settlement patterns would appear to represent different adaptations devised by the same group of people
[161] to meet differing conditions. Differing rates of population growth also would appear to be the result of the changing circumstances.

Settlement Pattern

175
161
361 During 1932-33, Gillin estimates a Carib population of not more than 600 for the entire Barama River area (1936:113). In all, thirty-three settlements were located along the Barama River (1936: 110). About ten[3] were above Towakaima (see Figure 6). This includes the Sawari[4] settlement for which more complete population data were
175 recorded. The population for this settlement consisted of forty-seven
161 individuals (1936:110). Since the primary adaptation was to the rain
162
361 forest, there were no reported concentrations of population in the

[TEXT CONTINUED ON PAGE 40]

175 Upper Barama area. Rather, the settlements were dispersed along the
161 river corridor and varied in population size from fifteen to fifty
162 individuals (1934:333).[5] The Carib settlements were named for the
361 creek they were near (1936:98), and house structures were located in
[103] the cultivated fields. Thus, locations fluctuated around a creek as
well as among creeks. Accordingly, ten inhabited settlements in the
Upper Barama River area could be estimated to represent a population
[126] of perhaps 200. This number is also supported by genealogies
recorded in 1970-71.

175 With respect to interactions among these settlements in the Upper
628 Barama River area, Gillin reports that the residents of Savari were
in contact with Haiari, Kwamata, and Kureva (1936:106). He also
reports that this group of Caribs was "completely out of touch with
those farther up the river" (1936:106).

Subsequent inquiry reveals this may not have been the case.[6]
Verbal communication as well as a recognition of kinship relation-
ships seem to have been maintained throughout the Upper Barama River
area during this early period. In 1970-71, one informant remembers
that as a small boy he accompanied an adult male relative on a walk
from one of the settlements in the upper section of the Upper Barama
*[177] River to visit other relatives in Savari. They were lured by news
of the white man (Gillin) living there and curious enough to go and
see for themselves. However, when they reached Savari, Gillin was
in Georgetown. The travelers had to content themselves with a close
examination of all the camp gear.

Contacts among the Carib settlements on the lower section of the

175 to employment opportunities. Around the mine In Time, a nucleation
*177 of population is clearly evident. The settlements further away from
361 the mine were the first abandoned. Many of these people left for Matthew's Ridge or the Cuyuni River. However, the employment and market opportunities at In Time attracted and supported the largest portion of the local Carib population.

*177 The permanent workers at In Time had no large farms. They resided
175 close to the mine and bought provisions. There were two of these
361 residential groupings, one around the mine and one at Big Creek. In
162 the spring of 1969, there were 103 residents near the mine and sixty-eight at Big Creek. Also, three satellite settlements dependent on frequent opportunities to sell provisions and occasional employment were located less than ten miles away from the mine. These were Aranka with a population of ninety and Baramita[7] with forty-seven (see Figure 8). In addition, fifty-three people were located at Baramita Air Strip itself. By this time the declining activities at the mine and the limited opportunities provided by the missionaries attracted some people to the Air Strip. The remaining population was located in more remote settlements including thirty-nine at Piai Creek, thirty-six at Korotoko, thirty-four at Barama Head, twenty-nine at Korisho, and five at Maswakai.[8] The average population size of
[161] these more remote settlements was about thirty-five people.[9] Thus, the total population was 504.

*177 It must be noted that the Amerindian Captain has been active in
175 attempting to settle Carib people at the Air Strip. In 1969 he had
361 a measure of success among the 119 Caribs from the five settlements
622

[TEXT CONTINUED ON PAGE 46]

2: Adams E-4,5 (1970-1971) 1973 SR9 Carib SR9
(1932-1971) Barama River

TABLE 4

361
162
• 161

POPULATION OF SETTLEMENTS, 1969

In Time	103
Big Creek	68
Aranka	90
Baramita	47
Baramita Air Strip	53
Piai	39
Korotoko	36
Barama Head	34
Karisho	29
Masvakai	5*
Total	504

(166) *This number had been recently depleted by 32. These people along with the entire population of Anama, 32, and 19 from In Time had gone to Matthew's Ridge.

TABLE 5

361
161
162

POPULATION OF SETTLEMENTS, 1970-71

Baramita Air Strip	333
Aranka	114
Baramita	69
Total	551*

*This number includes the old man and woman at Piai.

*177 a population of 114 and Baramita sixty-nine. These two settlements
361 also have mobile residents who have access to farms in still more
162 remote areas. The latter include thirty-five inhabitants.[10] In
[16] total, there were 551 Carib people in the Upper Barama River area in 1971.

*177 Increasingly, the practice of abandoning a house site in the case
768 of a death is being neglected. A cemetery some distance away is
[764] being used at the Air Strip. Several older graves around house sites are disregarded. Apparently, priorities of location override this tradition.

*177 Figure 11 shows the current settlement pattern. Both zone a and
361 b have permanent residents. Zone c residents also make use of farms in either zone a or b. There is little direct movement between zone a and b. The partial centralization of population initiated by the local mining economy has been completed. Within the existing nucleation, the center has been changed from the mine to the air strip. The remaining population has been drawn into this locus. In contrast to the limited opportunities available at the mine, some of the
[657] opportunities at the Air Strip are public. That is, they are avail-
[464] able to all Caribs. These new resources are the clinic, the school, and agricultural assistance. However, very few employment opportuni-
[241] ties are available at Baramita Air Strip. Bush farms must be maintained and returned to in the case of the permanent workers who had left aside subsistance in the rain forest.

Consequently, a pattern of dual residence appears to be emerging in response to resource development. The local Carib population has

[TEXT CONTINUED ON PAGE 52]

2: Adams E-4,5 (1970-1971) 1973 SR9 Carib SR9
(1932-1971) Barama River

175 a population of approximately 200 people. This provided a density of
162 approximately one person per five square miles along the Upper Barama
[161] River corridor.

*177 Over time, with the introduction of external resources, this
162 relationship has been changed. The niche of the Upper Barama Caribs
was first extended by exchange and employment opportunities. Peberty's
observations (1948) on this population were made during the first ex-
[161] tensive involvement in employment. However, the data presented take
the form of estimates rather than actual figures.

114 Peberty visited the Upper Barama River area sometime between
161 December 1945 and February 1946 for the purpose of making suggestions
181 for Amerindian development. He reports that "The Upper Barama River
Caribs are the most impoverished and traumatic aboriginal group that
I have encountered throughout the length and breadth of British
Guiana" (1948:20). In part, he attributes this condition to the loss
of Carib crafts as a consequence of opportunities with the miners.
[165] Peberty reports further an unspecified but "relatively high" infant
mortality (1948:15). However, he provides no explanation. Also, he
suggests that a reputed decline in the population is related to the
"morbid conditions of these contemporary Carib groups" (1948:20). He
estimates about 474 Caribs for the Upper Barama River area and the
114 Barima tributaries (1948:15). Little can be said regarding population
161 increase or decrease at this time from his observations. However,
there is one indication that the population size reported by Gillin
was little changed. In 1953, eighty-eight adults were registered to
[666] vote in the Upper Barama River area.

175 *177 • 161 [464] Clearly by the 1940's, exchange and employment opportunities play an important role in respect to this Carib population's adaptation. Men were being regularly engaged in mining activities and increasing numbers of them were permanent workers for Baird. Despite Peberty's comments, there is evidence that the reproductive pattern was greatly changed.

175 *177 162 In 1960 government census provides the first evidence of this increase in population size. Unfortunately in this report, the inhabitants between Kokerite and Towakaima were counted with the Upper Barama River Caribs. In this larger group, there were 565 people, including 285 males and 280 females. As a partial indication of what portion of these were in the Upper Barama River above Towakaima, 142 adults from this area were registered to vote in 1961. Table 6 presents the age structure and sex composition of the larger [163] Carib group. Also, for the year preceding the census, there were 13 births all occurring to women under 45. Expressed as a crude birth rate, this is 23.5 births per thousand total population.

175 657 In the investigation of the change in population size, it must be pointed out that early health care was haphazard at best. Systematic health care was not available until very recently. It should be noted that 1960 was the first year the Malaria Eradication Programme was 175 657 164 extended into the Upper Barama area. At that time, 271 smears were taken and 23 were positive for malaria. This is an incidence of malaria for 8.6 percent of the population tested. The Malaria Eradication Programme resumed in the Upper Barama area in the summer of 1966. At that time, 314 people were tested. Of this number,

[TEXT CONTINUED ON PAGE 60]

common among all children in the age range from about eighteen months to four years. These children no longer nurse and yet are not old enough to effectively gather casual protein and other foods on their own. However, if a family's subsistence crisis becomes extended, a child in this age range may be given up for adoption, usually by a family of immediate kinsmen. Three cases of such adoption recently occurred among the segment of the population at the Air Strip. Consequently, the protein deprivation of children was not sufficient to cause any deaths during August 1970 to July 1971. For this period, two deaths occurred in the total population. Both were in the age category of over sixty-five.

Clearly, health programs cannot be held responsible for any major changes in population size which occurred before 1960. Health care has been introduced only in the last years and certainly has influenced the mortality rate of infants and others. Nevertheless, the change in the pattern of reproduction occurred previous to these health measures, as will be apparent from data collected among the population in question during 1970-71.

During 1971, there were 551 Caribs in the Upper Barama River drainage basin. This number includes 280 males and 271 females. The age structure and sex composition for the total population are presented in Table 7. Table 8 reports the age structure and sex composition for the segment of the population at Baramita Air Strip; Table 9, for the remaining population in the satellite settlements.

As is clear, 264 or 47.9 percent of the total population is under ten years of age. Also, it is apparent that this larger proportion

[TEXT CONTINUED ON PAGE 65]

TABLE 7

AGE STRUCTURE AND SEX COMPOSITION
FOR UPPER BARAMA RIVER CARIB POPULATION, 1971

162

	male	percent of total male	female	percent of total female
75 and over	1	.4	1	.4
70-74	2	.7	1	.4
65-69	3	1.1	3	1.1
60-64	5	1.8	2	.7
55-59	5	1.8	3	1.1
50-54	6	2.1	1	.4
45-49	7	2.5	9	3.3
40-44	5	1.8	11	4.1
35-39	10	3.6	13	4.8
30-34	3	1.1	17	6.3
25-29	21	7.5	19	7.0
20-24	23	8.2	22	8.1
15-19	20	7.1	24	8.9
10-14	25	8.9	25	9.2
5-9	55	19.6	38	14.0
0-4	89	31.8	82	30.3
Totals	280		271	
[161] Complete Population Total	551			

2: Adams E-4,5 (1970-1971) 1973 SR9 Carib SR9
(1932-1971) Barama River

TABLE 8

162
361

AGE STRUCTURE AND SEX COMPOSITION
OF BARAMA AIR STRIP POPULATION, 1971

	male	percent of total male	female	percent of total female
70-74	1	.6	1	.6
65-69	2	1.1	2	1.3
60-64	5	2.9	1	.6
55-59	5	2.9	3	1.9
50-54	2	1.1	1	.6
45-49	4	2.3	3	1.9
40-44	4	2.3	9	5.7
35-39	4	2.3	6	3.8
30-34	3	1.7	8	5.0
25-29	16	9.2	15	9.4
20-24	11	6.3	13	8.2
15-19	13	7.5	16	10.1
10-14	17	9.8	21	13.2
5-9	33	19.0	22	13.8
0-4	54	31.1	38	23.9
Totals	174		159	
[161] Complete Population Total	333			

and 171 children in the age category of four years and under. Of course, this discounts incidences of mortality as well as the passage in and out of these age categories with time. More specifically, from July 1970 through June 1971, twenty-five children were born to the segment of the Carib population at Baramita Air Strip. Expressed as a crude birth rate, this is eighty-three births per 100 population. Expressed as a general rate of birth,[14] in this case the ratio of births to women between ages twenty and forty-four, this is 490.3 births per 1000 women. At this rate of growth, coupled with the current negligible rate of mortality, this population will double in size about every ten years or until limiting factors intervene.

The reproductive histories of the women at Baramita Air Strip allow a closer focus on this new reproductive pattern. Among this segment of the population, sixty-three women have borne children.[15] The reproductive histories of fifty-nine of these women were collected and are presented in Table 10. The age categories selected are under twenty-five, twenty-five to thirty-nine, forty to fifty-four, and fifty-five and over. Organized in this manner, it is clear that the reproductive careers that occurred after 1940 are quite different from reproductive careers that did not. The women in the younger age category, forty to fifty-four, show clear evidence of the new reproductive pattern of twenty to thirty month intervals between births. The oldest woman in this group is estimated to be fifty-one. Accordingly, all of these women began reproducing after the availability of employment and market opportunities with the mining companies.

*179 439 [412] [415] [175] Throughout the time period under consideration, commercial trade goods have been incorporated, mostly by way of substitution for their local equivalent. Axeheads, cutlasses, knives, iron griddle pans, cotton cloth, and shotguns reached the population in varying degrees at the time of Gillin's study (1934:332). These trade goods did not lose their popularity. They have been added to by other external resources and their quantity and availability have been increased. [163] [161] [511] [621] Eventually, a flow of external goods and services into the Upper Barama River area has resulted in an increased birth rate and an increasing population size, an improved standard of living, and changes in the social organization of the population.

*177 175 443 [484] However, markets have been introduced and controlled by external agents. As has already been explained, the Upper Barama River Caribs do not have easy access to regional markets. They do not travel to transact regional exchanges. Rather, they have depended on the opportunities provided by non-Carib middlemen who reside in the Upper Barama River area and who have good access to the limited transportation and communication facilities. As characteristic of the conveyance of regional exchanges into remote areas, market opportunities have been highly personalized. This was characteristic of the early period of porknocking activities and the existence of the gold companies. [657] Personalized market networks continue to be associated with government programs and services at Baramita Air Strip.

*177 195 437 439 Market Opportunities Provided by the Early Gold Seekers

The earliest regional exchanges reported for these Caribs involved

2: Adams E-4,5 (1970-1971) 1973 SR9 Carib SR9
(1932-1971) Barama River

VI

CONCLUSIONS

In the previous chapters, attention has been given to the correlations over time of resources available for exploitation and the size and organization of a single population. The economic and reproductive adjustments of the Upper Barama River Caribs have been investigated. In their specific pathway from relative isolation in the rain forest into a national political economy, social organization and population size have been related to resource development. As this population has been centralized by common participation in networks of regional exchange, the household has emerged as the resource-sharing social unit. Ties of general reciprocity with a wider kinship group have tended to be dissolved. Another type of organization which has emerged to consolidate advantage in the regional economy has been client relationships with a middleman patron. In addition, external sources of food and clothing and medical care have tended to override relationships between population size and adaptation to local rain forest resources. An accelerating rate of population growth is currently evident among the Upper Barama River Caribs. In short, this population has evidenced changes in organization and increased population size under the conditions of its national integration.

Adapting to the rain forest, the Upper Barama River Carib population participated in the direct organism-to-organism cycling of

energy characteristic of this environment. Slash-and-burn cultivation is a replication of the rain forest, and in this manner, human groups do not extend their niche through agriculture but rather integrate food production with the extant biotic community (Geertz 1963:15-28; Meggers 1971:19-21). The productivity of cultivation, hunting, fishing, and gathering were the essential components of subsistence, and the Upper Barama River Caribs, limited in population size, shifted in location as a response to these endeavors. As a consequence of this semi-nomadic adaptation, the largest social unit was the settlement, within which the sharing of resources and the exchange of labor were patterned.

In contrast, wage labor and other regional markets and modern medical technology have combined to expand the niche of the Upper Barama River Carib population. In turn, population size has expanded. At the time of Gillin's (1936) study in 1932-33, the Upper Barama River Caribs numbered about 200 and were located in dispersed settlements along the river corridor. There are now more than 550 Caribs nucleated around Baramita Air Strip. This increase in size has been achieved despite losses due to migration. The current rate of increase is about eight percent annually. Coupled with a low death rate, this is indicative of the potential for further increases among this population. Using population size as the coefficient of adaptation as proposed by Alland (1967, 1970), clearly a successful adjustment has been made to the new resources available over the short term generation-to-generation time span.

In this context, any projections for either the future of the